Hitachi EH Series PLC

(Supports Communication Mode: Procedure 1, Procedure 2)

HMI Factory Setting:

Baud rate: 19200, 7, Even, 1 (RS-232)

Controller Station Number: 0

Control Area / Status Area: W0 / W10

Connection

a. RS-232 (DOP-A/AE/AS, DOP-B Series)

DOP series		Controller
9 pin D-sub male (RS-232)		RJ-45 cable connector (RS-232)
RXD (2)	————	(5) SD1
TXD (3)	————	(6) RD1
GND (5)	————	(1) SG1
RTS (7)	————	(7) DR1
CTS (8)	————	(8) RS1

b. RS-422 (DOP-A/AE Series)

DOP series		Controller
9 pin D-sub male (RS-422)		RJ-45 cable connector (RS-422)
RXD- (1)	————	(5) TXN
RXD+ (2)	————	(4) TX
TXD+ (3)	————	(6) RX
TXD- (4)	————	(7) RXN
GND (5)	————	(1) SG1

c. RS-422 (DOP-AS35/AS38/AS57 Series)

DOP series	Controller
Terminal Block (RS-422)	RJ-45 cable connector (RS-422)
R-	(5) TXN
R+	(4) TX
T+	(6) RX
T-	(7) RXN
GND	(1) SG1

d. RS-422 (DOP-B Series)

DOP series	Controller
Terminal Block (RS-422)	RJ-45 cable connector (RS-422)
RXD- (9)	(5) TXN
RXD+ (4)	(4) TX
TXD+ (1)	(6) RX
TXD- (6)	(7) RXN
GND (5)	(1) SG1

e. RS-485 (DOP-A/AE Series)

DOP series	Controller
9 pin D-sub male (RS-485)	RJ-45 cable connector (RS-485)
D+ (2)	(5) TXN
D+ (3)	(6) RXN
D- (1)	(4) TX
D- (4)	(7) RX
GND (5)	(1) SG1

f. RS-485 (DOP-AS57 Series)

DOP series   Controller

Terminal Block (RS-485)   RJ-45 cable connector (RS-485)

	(5) TXN
R+	
	(6) RXN
	(4) TX
R-	
	(7) RX
GND	(1) SG1
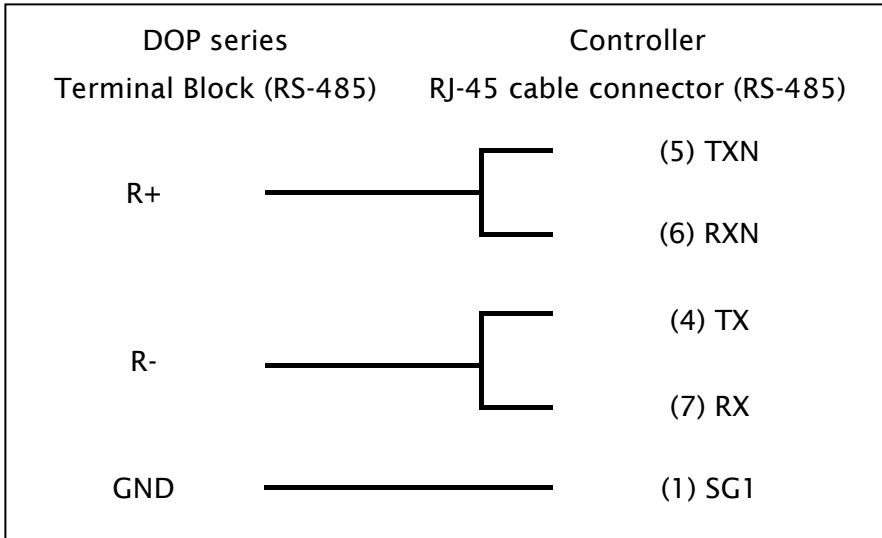
g. RS-485 (DOP-AS35/AS38 Series)

DOP series   Controller

Terminal Block (RS-485)   RJ-45 cable connector (RS-485)

R+	(5) TXN
T+	(6) RXN
R-	(4) TX
T-	(7) RX
GND	(1) SG1

h. RS-485 (DOP-B Series)

DOP series   Controller

Terminal Block (RS-485)   RJ-45 cable connector (RS-485)

	(5) TXN
D+(1)	
	(6) RXN
	(4) TX
D-(6)	
	(7) RX
GND(5)	(1) SG1
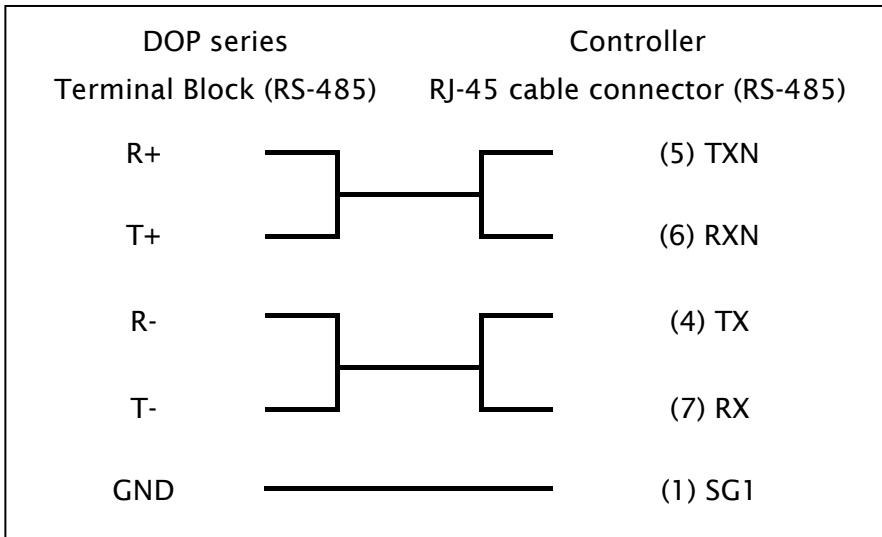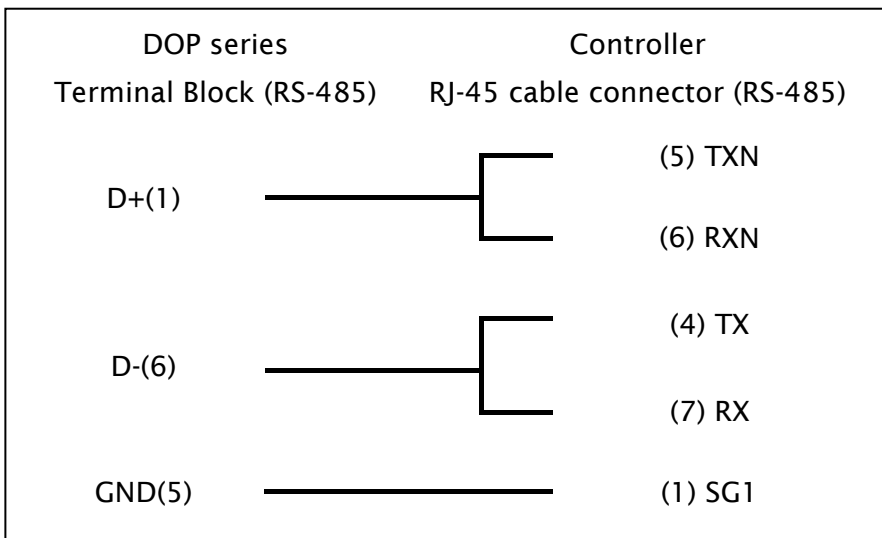
Definition of PLC Read/Write Address

a. Registers

Type	Format Rank No.(r) Unit No.(u) Slot No.(s) Word No.(n)	Read/Write Range	Data Length	Note
External Input	**WX**rusn	**WX**0000 – **WX**A744	Word	3, 5
External Output	**WY**rusn	**WY**0000 – **WY**A744	Word	3, 5
Internal Output	**WR**n	**WR**0 – **WR**C3FF	Word	
Special Internal Output	**WR**n	**WR**F000 – **WR**F1FF	Word	
Shared Internal Output	**WM**n	**WM**0 – **WM**3FF	Word	
CPU Link Area 1	**WL**n	**WL**0 – **WL**3FF	Word	4
CPU Link Area 2	**WL**n	**WL**1000 – **WL**13FF	Word	4
Timer/Counter	**TC**n	**TC**0 – **TC**511	Word	

b. Contacts

Type	Format Rank No.(r) Unit No.(u) Slot No.(s) Word No.(n) Bit No.(b)	Read/Write Range	Note
External Input	**X**rusb	**X**0000 – **X**44495	3, 5
External Output	**Y**rusb	**Y**0000 – **Y**44495	3, 5
Internal Output	**R**b	**R**0 – **R**7FF	
Shared Internal Output	**M**nb	**M**00 – **M**3FFF	
CPU Link Area 1	**L**nb	**L**00 – **L**3FFF	4
CPU Link Area 2	**L**nb	**L**10000 – **L**13FFF	4
On Delay Timer	**TD**b	**TD**0 – **TD**255	
Single-shot Timer	**SS**b	**SS**0 – **SS**255	
Up Counter	**CU**b	**CU**0 – **CU**511	
Up-down Counter up input	**CTU**b	**CTU**0 – **CTU**511	
Up-down Counter down input	**CTD**b	**CTD**0 – **CTD**511	
Up-down Counter down output	**CT**b	**CT**0 – **CT**511	

Type	Format Rank No.(r) Unit No.(u) Slot No.(s) Word No.(n) Bit No.(b)	Read/Write Range	Note
Progress Value Clear	**CL**b	**CL**0 – **CL**511	
Rising Edge Detection	**DIF**b	**DIF**0 – **DIF**511	
Falling Edge Detection	**DFN**b	**DFN**0 – **DFN**511	

✏️ **NOTE**

1) In Hitachi EH series PLC, the user can select procedure 1 and procedure 2 via DIP switch and Special Internal Input (WR). Please refer to Hitachi EH PLC manual for more detail.

2) In Hitachi EH-150 series，only EH-CPU***A/448/516/548 can use procedure 2.

3) EH PLC's External I/O (**WX, WY, X, Y**) data must be set up first before HMI can read and write the address. Please refer to Hitachi EH PLC for more detail.

4) This type of register is only supported by EH-150 series.

5) External I/O (**X, Y, WX, WY**)address rule

   ● Symbol：

      Rank No.：r，only supported by EH-150 series

      Unit No.：u

      Slot No：s

      Word No.：n

      Bit No.：b

   ● Address Sample:

      WX103 represents unit 1, word 3 of slot 0

      X103 represents bit 3 of slot 1

      X113 represents bit 13 of slot 1

      Y2004 represents unit 2, bit 4 of slot 0

      Y2104 represents unit 2, bit 4 of slot 1

6) EH-150 Setting

   ● DIP5 should be set to ON.

   ● If DIP5 is set to ON, PLC will determine the proper procedure (1 or 2) by the value of WRf037. When setting the address, the highest bit of write value must be 1 and then

PLC can write the value into other seven bits. The data will not lost even when the power of PLC is cut off. Therefore,

  i. Write the value 0x8000 into the address. After restart PLC, the address value will become 0x0000 and perform communication by procedure 1.

  ii. Write the value 0xC000 into the address. After restart PLC, the address value will become 0x4000 and perform communication by procedure 2.

- Use DIP3 and DIP4 to set the communication speed of port 1.

  i. When DIP3 is ON and DIP4 is OFF, the communication speed is 19200bps.

- Use DIP6, PHL to set the communication speed of port 2.

  i. When DIP6 is ON and PHL is OFF, the communication speed is 19200bps.

  ii. The EH-150 PLC is a "Base Unit" which has a built-in CPU module. This unit allows easy connection of extension module, such as "External I/O".

7) MicroEH

- DIP5 is used to set communication speed.

  i. When SW1 is ON, the communication speed is 19200bps. Please refer to Hitachi EH PLC manual for more detail.

- MicroEH PLC will determine the proper procedure (1 or 2) by the value of WRf01a. Different than EH-150, when setting the address, the highest bit of write value does not need to be 1. But the data will lost even the power of PLC is cut off. However, if set the value of R7f6 to 1, the data of WRf01a will be saved into Flash memory.

  i. 0x0000 for procedure 1.

  ii. 0x8000 for procedure 2.

  iii. If the PLC uses procedure 2 and saves the data into Flash memory, it cannot connect to the peripheral devices and programs (Ladder Editor) that only support procedure 1.

  iv. Standard External I/O built in MicroEH PLC are listed as below:

- Digital Type
  - slot 0: X48
  - slot 1: Y32
  - slot 2: empty16
- Analog Type
  - slot 3: X4W
  - slot 4: Y4W